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SUMMARIES OF ACTIVITIES DURING HURRICANE HARVEY
EPA REGION 6

Introduction

On August 25, 2017, Hurricane Harvey impacted the Texas Coast as a Category 4 Hurricane. EPA Region 6 immediately activated their Regional Emergency Operations Center (REOC) and deployed personnel to begin coordinating with the State of Texas on emergency response activities. The Federal Emergency Management Agency (FEMA) requested Emergency Support Function-10 (ESF-10) assistance for oil and hazardous materials coordination to the State Emergency Operations Center (SEOC) and the FEMA Regional Response Coordination Center (RRCC). On August 28, 2017, FEMA issued a Mission Assignment to EPA Region 6, requesting ESF-10 assistance to the State of Texas in support of assessment and response operations to actual or threatened hazardous materials and oil releases/discharge under the Robert T. Stafford Disaster Relief and Emergency Assistance Act.

EPA was ready, and rapidly responded to the State's request for support with field operations, which included but was not limited to: identification and assessment of impacts to drinking water and wastewater critical infrastructure; assistance in the implementation of the Response Manager tracking system; response to oil and hazardous materials discharges/releases; augmentation of personnel for response operations; aerial and ground assessments to identify and evaluate discharges/releases; collection and disposal of accumulations of orphaned containers; and assessment of damages to oil/chemical facilities. The Response Manager mobile field data collection tool was used during the incident to identify and track sites where there were potential containers or spills, prioritize assessments of those sites, and track operations (emergency responses; water assessments; orphaned container recovery; as well as other information).

As part of the response, EPA established a Unified Command between EPA, the Texas Commission on Environmental Quality (TCEQ), the Texas General Land Office (TGLO), and the U.S. Coast Guard (USCG). The command was supported by three geographic operational branches based in Corpus Christi, Houston, and Port Arthur/Beaumont. Other agencies supporting the Unified Command included the Texas National Guard, The 6th Civil Support Team (CST), the Arkansas National Guard, the 61st CST, the Oklahoma Task Force 1, and the Texas State Guard Engineering Group.

At the peak of the response, over 175 EPA personnel worked with over 500 TCEQ personnel, as well as other state and local officials on this effort. For information on the response, EPA established a website with up-to-date information: https://response.epa.gov/Hurricaneharvey2017. The TCEQ has a website to provide the citizens of Texas with information: https://www.tceq.texas.gov/response/hurricanes

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Water/Wastewater Assessments

EPA completed its efforts to support the state of Texas with drinking water and wastewater infrastructure on September 15, 2017. EPA provided 19 days of direct assistance to the Texas Commission on Environmental Quality. On August 28, 2017, the TCEQ requested support to identify and assess impacts to drinking water and wastewater critical infrastructure resulting from Hurricane Harvey and the resulting floods.

About 2,238 drinking water systems were affected by Harvey. Of those: 2,014 systems are fully operational, 48 have boil-water notices, and 5 are shut down. The TCEQ and EPA made contact with 1,219 wastewater treatment plants in the 58 counties within the Governor's Disaster Declaration. Of those, 9 are inoperable in the affected counties. The agencies are aware that releases of wastewater from sanitary sewers occurred as a result of the historic flooding and monitored facilities that reported spills.

On August 28, 2017, EPA provided 10 water quality experts to augment the TCEQ phone bank in Austin to contact water and waste water treatment facilities in the impacted areas to determine their operational status, as well as whether or not there were Boil Water Notices (BWNs). Based on phone assessments, facilities were targeted for on-site visits to assess the facility's ability to conduct operations.

EPA also provided 16 additional staff members to augment and integrate with TCEQ staff in rapidly conducting on-site assessments at water and waste water systems in the Houston area. On-site assessments were conducted at approximately 625 drinking water and 440 waste water treatment facilities, when EPA operations were concluded. Assistance teams in the field worked directly with system operators to expedite getting systems back to operational status. The results of the assessments and phone interviews were shared with the U.S. Army Corps of Engineers (USACE) for their infrastructure assessments and work. The TCEQ will use the assessment results to provide future assistance to the impacted facilities.

As of September 15, the remaining wastewater system restorations and lifting of boil water notices oversight were transitioned to the TCEQ regional offices. Additional information on boil water notices can be found at: https://www.tceq.texas.gov/response/hurricanes

On September 12, the EPA approved the Texas Water Development Board proposal to utilize State Revolving Funds from the EPA to address immediate recovery and future resiliency efforts in Texas.

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Potential Release Assessments with ASPECT, TAGA, and PHILIS

EPA and TCEQ received reports and citizen complaints of possible releases and spills of hazardous materials and oil throughout the hurricane damaged areas. Initially there were also concerns by EPA, TCEQ, and the Department of Homeland Security (DHS) over potential releases and damage to key infrastructure including large oil and chemical facilities, drinking water and waste water facilities, pipelines, refineries, Risk Management Plan facilities, and Facility Response Plan oil storage facilities. TCEQ requested EPA to provide assistance to assess these facilities for potential releases. EPA mobilized several national assets to accomplish this task.

The U.S. EPA Airborne Spectral Photometric Environmental Collection Technology (ASPECT) is an airborne platform equipped with special chemical and radiological sensors and imagery technologies. It detects chemicals while collecting aerial photos and videos for situational awareness during an incident. The ASPECT flew 28 flights over 112 hours covering miles of pipelines, 134 Risk Management Plan facilities, 456 drinking water plants and 105 waste water plants in support of the Hurricane Harvey response from August 31 to September 11, 2017. The screening level results from ASPECT were compared to the list of TCEQ short-term Air Monitoring Comparison Values (AMCVs). The screening data found no exceedances of the short-term AMCVs. ASPECT was also instrumental in monitoring the and providing data to emergency responders on the ground during the Arkema explosion and fire.

EPA deployed two Trace Atmospheric Gas Analyzer (TAGA) mobile laboratories, commonly referred to as TAGA buses, to assist in response activities as a result of Hurricane Harvey. The TAGA is self-contained and is capable of real-time monitoring of outdoor air emissions. The TAGA lab monitored the ambient air in the vicinity of approximately 25 facilities and adjacent neighborhoods in the impacted areas from September 5 to September 20, 2017. The facilities ranged over 321 miles and the TAGA covered over 640 miles in conducting the air monitoring. No monitored readings exceeded the TCEQ AMCV short-term screening levels.

Portable High-Throughput Integrated Laboratory Identification System (PHILIS) is a mobile laboratory that EPA used to screen floodwaters associated with the Arkema fire early in the response. Floodwater samples were analyzed for volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs). No VOCs or SVOCs were detected in the Arkema floodwater samples.

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Orphan Container Recovery

At the conclusion of any hurricane, there are commonly hundreds to thousands of orphaned containers resulting from the storm surge, high winds, heavy rains, and resulting floods. These orphan containers can range in size from a few quarts to thousands of gallons and contain unknown chemicals. They end up in waterways, wetlands, residences, or public properties posing unknown threats to the public and the environment. As a result, TCEQ requested assistance in conducting field operations to remove and dispose of orphan drums and containers through a FEMA Mission Assignment.

EPA, in coordination with TCEQ, TGLO, and the USCG, established joint teams and operations (Unified Command) in Corpus Christi, Houston, and Beaumont, Texas to assess, collect, characterize, and dispose of orphan containers in the impacted areas. All actions were conducted in such a manner as to avoid or minimize additional damage to the sensitive environments. To this end, prior to beginning recovery operations, both ground and aerial reconnaissance (using EPA's ASPECT and helicopters) were conducted. The joint federal/state teams assessed and gathered information on over 640 locations where potentially orphaned containers were identified. These sites were evaluated for possible access routes for recovery. Unified command also identified and procured temporary staging locations; determined appropriate equipment needs, and evaluated safety considerations. EPA assigned unique identifiers in its Response Manager database for orphan drum and container targets in order to prioritize and assign joint federal/state teams for recovery.

Following the reconnaissance, the Unified Command created tactical maps of all developed performance guidelines in conjunction with both State and Federal natural resources trustee agencies in order to minimize any collateral environmental damage, while mitigating hazardous material threats to public health and environment. When operations were conducted in sensitive habitats, wetlands-experienced personnel documented all activities before, during and after recovery. Some items were left in place because they were not a hazardous material threat or the contents were emptied and the containers no longer posed a significant public health or environmental risk relative to the likely environmental impact required for removal. Other containers were left in place when owners could be identified and contacted, resulting in the owner performing removal of their items. In addition, some containers or spills were referred to other state or local agencies. Containers located on federal land were referred to those agencies which own the land, such as Department of Interior (DOI) or USACE. These items were not addressed under this mission assignment as Federal lands are outside the statutory authority of the Stafford Act.

Ultimately, nearly 1,000 containers, including drums, cylinders, smaller containers, totes, and even above ground storage tanks (ASTs) were recovered and transported to waste pads. Once there, the contents were characterized, bulked, and transported for safe and disposal. Where possible, owners of containers were identified and notified to reclaim and reuse their containers.

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Emergency Responses

EPA and TCEQ, received over 200 reports of non-vessel spills of hazardous materials and oil throughout the impacted areas. TCEQ requested assistance in responding to these spills through FEMA under the Stafford Act.

The Unified Command conducted response activities to mitigate exposure threats from oil and hazardous substances associated with potential or actual discharges/releases from facilities. All response efforts were conducted in such a manner as to avoid or minimize additional damage to the sensitive environments. To this end, prior to beginning response operations, both ground and aerial reconnaissance almost daily (where applicable) were conducted. EPA utilized the Response Manager application to assign unique identifiers, gather information on the spill sites in order to prioritize and assign response or oversight actions to UC agencies as well as track progress and completion. Following the reconnaissance, the UC created tactical maps of all spill locations. The UC developed performance guidelines in conjunction with both State and Federal natural resources trustee agencies. The goal of the effort was to prioritize responses, assign joint agency teams, minimize any collateral environmental damage, while mitigating hazardous material threats to public health and environment.

From approximately August 28, 2017, through September 20, 2017, EPA assisted the state with responding to over 250 reports of spills to assess the extent of the release, the impact to human health and the environment, and to ensure the release was being properly addressed by the responsible party or appropriate agency. At the request of the Department of Homeland Security and/or TCEQ, EPA utilized ASPECT and TAGA to assessed 134 chemical facilities with Extremely Hazardous Substances (RMP facilities), 22 refineries and chemical manufacturing facilities, pipelines and large oil storage facilities (FRP facilities).

One such response was to a fire at the Arkema chemical plant in Crosby, Texas. EPA provided support to the Crosby Volunteer Fire Department and the Harris County Fire Marshal's Office during the event that resulted in an evacuation of the surrounding community. EPA collected downstream surface water runoff samples at four locations outside the evacuation zone and near residential areas. The results were below screening levels that would warrant further investigation. EPA also flew the ASPECT aircraft to evaluate what compounds were being released from the fire. ASPECT found no exceedances of the Texas comparison values. The EPA On-Scene Coordinator (OSC) participated in the Unified Incident Command for the response.

Other examples included oil spills such as the LD Construction spill and the Port Arthur RV Resort which resulted from flooding caused by Hurricane Harvey. TCEQ responded to the LD Construction spill in Lumberton but were not satisfied with the responsible party's progress on the cleanup. They were unable to identify the source on the RV Resort spill. TCEQ requested federal OSC assistance to ensure adequate and timely cleanups. In these two cases, the Oil Spill Liability Trust Fund was subsequently opened to pay for oversight of the cleanup.

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National Priorities List (NPL) Sites (not Mission Assignment related)

Although not part of the FEMA mission assignments, EPA's Remedial Program assessed 43 Federal Superfund NPL Sites in the affected area to ensure the remedies were still in place. Of these, 42 sites were cleared, and the San Jacinto Pits site continue to require additional follow-up.

EPA directed potentially responsible parties or independently started collecting samples at 34 Texas Superfund Sites and 9 Louisiana Superfund Sites to confirm no releases due to storm impacts. The sampling was part of a longer-term assessment that will be used to transition sites to their normal cleanup operations.

EPA has publically reported on **35 sites to date**. Review of preliminary and final data packages continues and will be reported as completed. Final Data packages for all sites are expected within two weeks.

The PHILIS mobile laboratory was used by EPA to analyze sediment, soil and groundwater samples in the evaluation of at several of the Superfund sites in the aftermath of Hurricane Harvey. Samples were analyzed for volatile organic compounds (VOCs) and semi-volatile organic compounds (SVOCs). PHILIS was able provide analytical results for VOCs and SVOCs within 24 hours of receipt of the sediment, soil or groundwater sample.